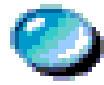


# The Sustainable Water Resources Roundtable



## SWRR



February 2006

Since 2002, the Sustainable Water Resources Roundtable (SWRR) has brought together participants from federal, state, corporate, non-profit and academic sectors to advance the knowledge and decision-making needed to sustain the nation's water resources. Because water resources have such a great influence on the vitality of our society, ecosystems and economy, a system of indicators to track water's quality and availability to meet needs was considered a priority.

Our society, ecosystems and economy depend highly on water resources yet no single organization has the mission or mandate to address the full spectrum of water resource issues. This fragmentation of responsibility, and a widespread interest in identifying water indicators of sustainability, brought about the formation of SWRR.

Just as the participants in SWRR represent a wide range of interests and responsibilities related to water resources, we hope that SWRR's work is useful to a wide and diverse audience. To this end, participation in SWRR by interested people and organizations is encouraged.



Alaska Salmon Stream

David Berry

### Supporting Organizations:

Advisory Committee on Water Information  
Alice Ferguson Foundation  
American Water Resources Association  
Annis Water Resources Institute  
Council on Environmental Quality  
Ecological Society of America  
Electric Power Research Institute  
Illinois State Water Survey  
Minnesota Environmental Quality Board  
Rural Community Assistance Program  
Universities Council on Water Resources  
University of Michigan, Ann Arbor  
University of California, Santa Barbara

US DOC National Oceanic & Atmospheric Administration  
US Dept. of Energy  
US Dept. of the Interior, Bureau of Land Management  
US Dept. of the Interior, Bureau of Reclamation  
US Dept. of the Interior, Fish and Wildlife Service  
US Dept. of the Interior, US Geological Survey  
US Dept. of the Interior, Office of the Secretary  
US Environmental Protection Agency  
USDA Natural Resources Conservation Service  
USDA, US Forest Service  
Water Environment Federation  
Western Pennsylvania Watershed Program

## SWRR Purpose and Activities

SWRR is one of four natural resource roundtables supporting the efforts of the White House Council on Environmental Quality to develop a comprehensive set of national environmental indicators. The other roundtables address critical issues and indicators for the management of forests, rangelands, and minerals and energy. SWRR is also chartered by the Advisory Committee on Water Information, which advises federal agencies responsible for managing water resources.

SWRR has hosted multi-stakeholder meetings on research needs and indicators from December 2002 through June 2005 in California, Maryland, Michigan, Minnesota, Virginia and Washington, D.C. SWRR receives funding from public agencies and the private sector.

## The SWRR Report

In December 2005, SWRR published a report with chapters on the role of indicators, conceptual foundations for the work of the roundtable, and criteria and indicators on the sustainability of water resources. The report also covers the research needs for sustainable water resources management that were discussed at SWRR meetings and covered in depth at a workshop held at the University of Michigan in April 2005. A final chapter discusses conclusions, recommendations and future work, as well as how federal and state governments, the private sector and non-profit organizations can help to achieve the sustainability of water resources. The appendices present a discussion of the water budget approach to management, a full list of candidate indicators and the SWRR terms of reference (bylaws). The report can be found at [http://water.usgs.gov/wicp/acwi/swrr/Rpt\\_Pubs/prelim\\_rpt/index.html](http://water.usgs.gov/wicp/acwi/swrr/Rpt_Pubs/prelim_rpt/index.html).

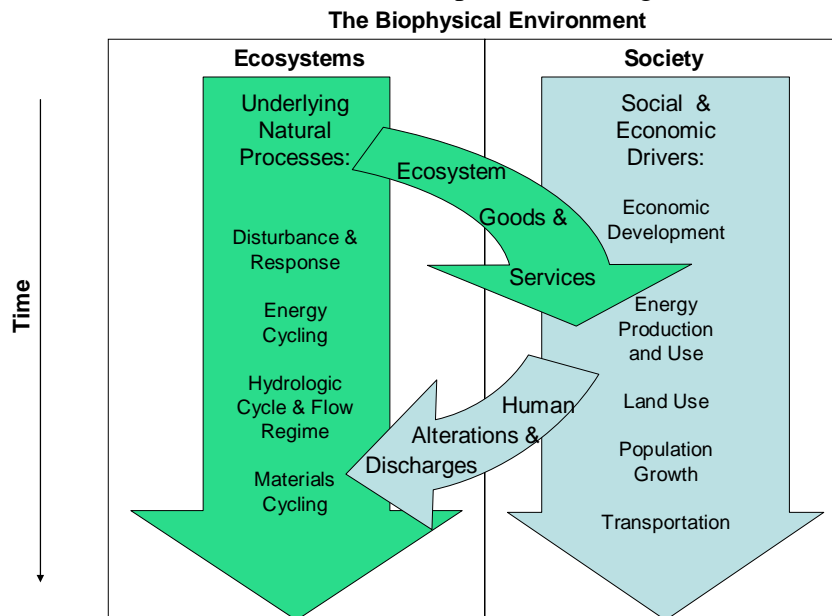
## Sustainability Principles

Discussions of water sustainability offer most promise when they take place with an understanding of major driving forces like population, income, land use, climate change and energy use. To help it navigate within such a context, SWRR identified a set of four sustainability principles for water resources management:

1. ***The value and limits of water.*** Water is the basis of life and provides great value. While water is abundant, people need to understand and appreciate that it is limited in many regions, that there are environmental and economic costs of damaging water resources, and that unbounded water and land use poses serious risks to people and ecosystems.
2. ***Shared responsibility.*** Because water does not respect political boundaries, its management requires shared consideration of the needs of people and ecosystems up- and downstream and throughout the hydrologic cycle.
3. ***Equitable access.*** Sustainability suggests fair and equitable access to water, water dependent resources and related infrastructure.
4. ***Stewardship.*** Managing water to achieve sustainability challenges us, while meeting today's needs to address the implications of our decisions on future generations and the ecosystems upon which they will rely.

## Representing Sustainability with Systems Concepts and Indicators

This figure displays the relationship between ecosystems, which include all living things, and society, which represents all the human elements of the biosphere including the economic system.



Indicators of water resource sustainability tell us “where we are” in meeting short- and long-term social, economic and ecological needs. Indicators highlight trends, help evaluate causes and effects, and give us a common language and understanding of issues. SWRR’s 17 indicator categories are an insert to this document. The analysis of sustainability is an ongoing, iterative process and we suggest users may use the whole set or those indicators most relevant to their own application. SWRR believes that effective indicators enable people to gain new tools to make good decisions – and that may be the nation’s best chance to achieve sustainable and adaptive management of its water resources.

## SWRR Work on Water-Related Research

At SWRR meetings, experts shared perspectives on decision-making for sustainability of water resources and on research needs and opportunities for collaboration. SWRR and the University of Michigan convened a workshop of 75 experts in April 2005 to explore research priorities with a focus on the Great Lakes Region. Research priorities were discussed in six areas: power generation, agriculture and forestry, urban issues, manufacturing and industry, ecological protection, and ethics, law and policy. Several key observations emerged in the conversation, including the need to:

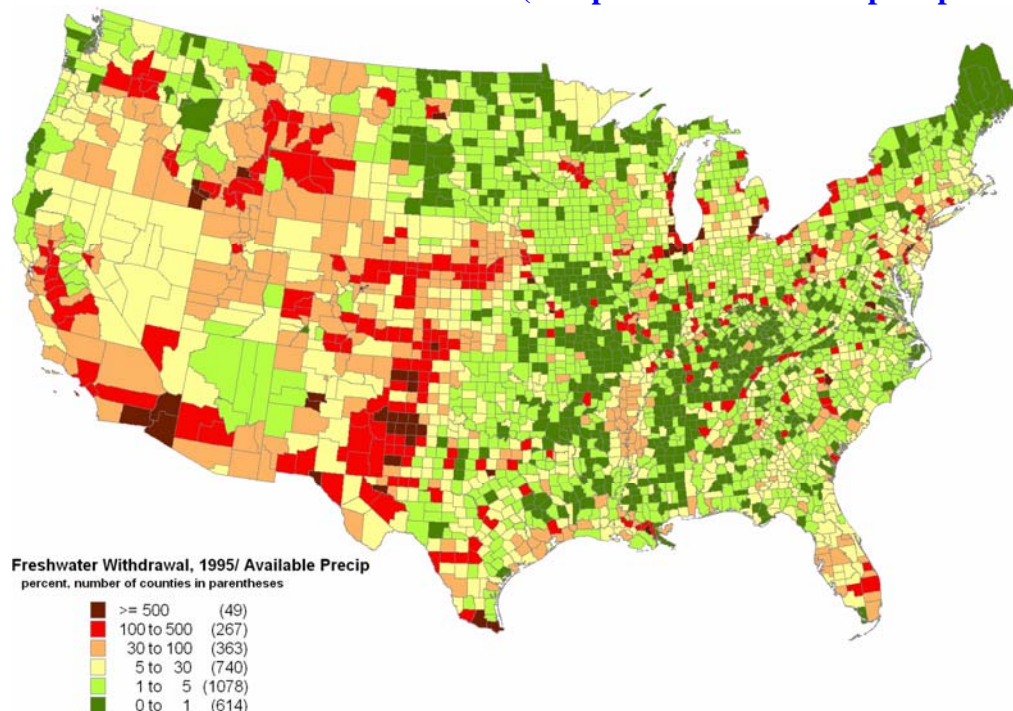
- Improve understanding of the critical water resource processes that impact sustainability
- Develop decision support models and tools
- Conduct a better inventory of critical data
- Adopt new monitoring technologies
- Develop a conceptual approach to quantify the value of water
- Establish new policies and law to manage water on a regional basis
- Solve the forecast drain in central human resources and knowledge

The SWRR Research Report is posted at [http://water.usgs.gov/wicp/acwi/swrr/Rpt\\_Pubs/MI-RPT/](http://water.usgs.gov/wicp/acwi/swrr/Rpt_Pubs/MI-RPT/).

## Tasks Ahead for SWRR and its Participants

- Complete, revise, and refine the indicators for tracking the sustainability of water resources including indicators scalable to national, state, and local levels
- Support and assist agencies by describing the need for programs to collect, manage and analyze the information necessary for generating indicators
- Expand contacts in the industrial community
- Continue meetings to inform and involve those in different regions of the nation to disseminate information, and to gain knowledge about regional indicators
- Work to increase representation from regional water management programs to benefit from their diverse points of view and experience, and to offer them the benefits of the networking among SWRR participants.
- Expand ties within the scientific community to ensure that SWRR employs state-of-the-art ideas in indicators development and to encourage additional research into water sustainability.
- Consult with the National Research Council Key National Indicator Initiative, the Council on Environmental Quality, the Heinz Foundation and others on water-related indicators.
- Explore development of a National Forum on Sustainable Water Resources in partnership with other organizations and forums as recommended by Harvard University study on SWRR.
- Develop a training workshop for education in water sustainability principles
- Brief Congressional staff on SWRR projects, products and related water resource information.

### Total Freshwater Withdrawal in 1995 (as a percent of available precipitation)



Source: Paper presented at SWRR meeting in Palo Alto, CA, March 2004. Roy, S.B., Ricci, P.F., Summers, K.V., Chung, C.-F. and Goldstein, R.A. Published as *Evaluation of the Sustainability of Water Withdrawals in the United States, 1995-2025*; Journal of the American Water Resources Association, 41(5):1091-1108, October 2005

**We welcome your participation in and support of the Sustainable Water Resources Roundtable.**

Further information on SWRR can be found at <http://water.usgs.gov/wicp/acwi/swrr>.

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